Thin films of multiferroic spinel CoCr2O4

Heuver, Jeroen Aaldert

Propositions

Belonging to the PhD thesis

"Thin films of multiferroic spinel $CoCr_2O_4$"

1 To grow flat and highly crystalline fully strained 001-$CoCr_2O_4$ films on MgO and $MgAl_2O_4$, active oxygen is necessary to increase the oxidation power.

2 111-oriented spinel $CoCr_2O_4$ thin films grown on 111-$SrTiO_3$ are fully relaxed from the first unit cell at the interface, but they show an epitaxial relationship with a 180° twist to the substrate lattice.

3 The magneto-crystalline anisotropy of $CoCr_2O_4$ thin films is mainly dependent of the coordination of the Co^{2+} cation.

4 Use of several complex representations of the impedance spectroscopy can give useful information on film properties.

5 (111)-$CoCr_2O_4$ films on (111)-$SrTiO_3$ have a biquadratic magnetoelectric coupling.

6 The orientation of anti-phase boundaries in $CoCr_2O_4$ spinel thin films are very dependent on growth conditions.